

$$\alpha_t = \left[\frac{R - \bar{R} - A \sum_{k=1}^T (R_k - \bar{R}_k)}{\sum_{k=1}^T (R_k - \bar{R}_k)^2} \right] (R_t - \bar{R}_t),$$

where R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , R_k is a portfolio return for period k , \bar{R}_k is a benchmark return for period k , k varies from 1 to T , $R_k = R_t$ for $k = t$, $\bar{R}_k = \bar{R}_t$ for $k = t$, R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1,$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1;$$

and determining the portfolio relative performance as

$$R - \bar{R} = \sum_{t=1}^T \sum_{i=1}^N (A + \alpha_t) (I_{it}^A + S_{it}^A),$$

where I_{it}^A is an issue selection for sector i and period t , S_{it}^A is a sector selection for sector i and period t , and i ranges from 1 to N ; and

a display device coupled to the processor for displaying a result of the arithmetic performance attribution computation.

6. (Twice amended) A computer system, comprising:

a processor programmed to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining attribution effects for issue selection $(1 + I_{it}^{G,Vestek})$ given by

$$1 + I_{it}^{G,Vestek} = \left(\frac{1 + w_{it} r_{it}}{1 + w_{it} \bar{r}_{it}} \right) \Gamma_t,$$

and determining attribution effects for sector selection $(1 + S_{it}^{G,Vestek})$ given by

$$1 + S_{it}^{G,Vestek} = \left(\frac{1 + w_{it} \bar{r}_{it}}{1 + \bar{w}_{it} \bar{r}_{it}} \right) \left(\frac{1 + \bar{w}_{it} \bar{R}_t}{1 + w_{it} \bar{R}_t} \right) \Gamma_t,$$

where the values of Γ_t are,

$$\Gamma_t = \left[\left(\frac{1 + R_t}{1 + \bar{R}_t} \right) \prod_{j=1}^N \frac{(1 + \bar{w}_{jt} \bar{r}_{jt})(1 + w_{jt} \bar{R}_t)}{(1 + w_{jt} r_{jt})(1 + \bar{w}_{jt} \bar{R}_t)} \right]^{\frac{1}{2N}},$$

where r_{jt} is a portfolio return for sector j for period t , \bar{r}_{jt} is a benchmark return for sector j for period t , w_{jt} is a weight for r_{jt} , \bar{w}_{jt} is a weight for \bar{r}_{jt} , r_{it} is a portfolio return for sector i for period t , \bar{r}_{it} is a benchmark return for sector i for period t , w_{it} is a weight for r_{it} , \bar{w}_{it} is a weight for \bar{r}_{it} , i ranges from 1 to N , $r_{it} = r_{jt}$ for $i = j$, $\bar{r}_{it} = \bar{r}_{jt}$ for $i = j$, $w_{it} = w_{jt}$ for $i = j$, $\bar{w}_{it} = \bar{w}_{jt}$ for $i = j$, R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1;$$

and determining the portfolio performance as

$$\frac{1 + R}{1 + \bar{R}} = \prod_{t=1}^T \prod_{i=1}^N (1 + I_{it}^{G, Vestek})(1 + S_{it}^{G, Vestek});$$

and

a display device coupled to the processor for displaying a result of the geometric performance attribution computation.

7. (Amended) A computer readable medium which stores code for programming a processor to perform an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining coefficients $(A + \alpha_t)$, where A is a coefficient, the values α_t are defined as

$$\alpha_t = \left[\frac{R - \bar{R} - A \sum_{k=1}^T (R_k - \bar{R}_k)}{\sum_{k=1}^T (R_k - \bar{R}_k)^2} \right] (R_t - \bar{R}_t),$$

where R_t is a portfolio return for period t , \bar{R}_t is a benchmark return for period t , R_k is a portfolio return for period k , \bar{R}_k is a benchmark return for period k , k varies from 1 to T , $R_k = R_t$ for $k = t$, $\bar{R}_k = \bar{R}_t$ for $k = t$, R is determined by

$$R = \left[\prod_{t=1}^T (1 + R_t) \right] - 1,$$

and \bar{R} is determined by

$$\bar{R} = \left[\prod_{t=1}^T (1 + \bar{R}_t) \right] - 1;$$

and determining the portfolio relative performance as

$$R - \bar{R} = \sum_{t=1}^T \sum_{i=1}^N (A + \alpha_i)(I_{it}^A + S_{it}^A),$$

where I_{it}^A is an issue selection for sector i and period t , S_{it}^A is a sector selection for sector i and period t , and i ranges from 1 to N .

8. (Twice amended) A computer readable medium which stores code for programming a processor to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t , where t varies from 1 to T , by determining attribution effects for issue selection $(1 + I_{it}^{G,Vestek})$ given by

$$1 + I_{it}^{G,Vestek} = \left(\frac{1 + w_{it} r_{it}}{1 + w_{it} \bar{r}_{it}} \right) \Gamma_t$$

and determining attribution effects for sector selection $(1 + S_{it}^{G,Vestek})$ given by

$$1 + S_{it}^{G,Vestek} = \left(\frac{1 + w_{it} \bar{r}_{it}}{1 + \bar{w}_{it} \bar{r}_{it}} \right) \left(\frac{1 + \bar{w}_{it} \bar{R}_t}{1 + w_{it} \bar{R}_t} \right) \Gamma_t,$$

where the values of Γ_t are,

$$\Gamma_t = \left[\left(\frac{1 + R_t}{1 + \bar{R}_t} \right) \prod_{j=1}^N \frac{(1 + \bar{w}_{jt} \bar{r}_{jt})(1 + w_{jt} \bar{R}_t)}{(1 + w_{jt} r_{jt})(1 + \bar{w}_{jt} \bar{R}_t)} \right]^{\frac{1}{2N}},$$

where r_{jt} is a portfolio return for sector j for period t , \bar{r}_{jt} is a benchmark return for sector j for period t , w_{jt} is a weight for r_{jt} , \bar{w}_{jt} is a weight for \bar{r}_{jt} , r_{it} is a portfolio